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June 23, 1999

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Re: Application of Alain BRUGOT and Bernard BARTHELEMY
METHOD FOR PRODUCING IMAGES HAVING AT LEAST A CODED PART INDISCERNIBLE TO THE NAKED EYE
Our Reference: Q54768
PCT/FR97/02360, filed December 19, 1997

Dear Sir:

Applicants herewith submit the attached papers for the purpose of entering the National stage under 35 U.S.C. § 371 and in accordance with Chapter II of the Patent Cooperation Treaty. Attached hereto is the application identified above which is a translation of **PCT International Application No. PCT/FR97/02360, filed December 19, 1997**, comprising the specification, claims, two (2) sheets of drawings, foreign International Preliminary Examination Report and International Search Report. The executed Declaration and Power of Attorney and Assignment will be submitted at a later date.

The Government filing fee is calculated as follows:

Total Claims	11 - 20 =	0 x \$18 =	\$ 000.00
Independent Claims	1 - 3 =	0 x \$78 =	\$ 000.00
Base Filing Fee	(\$840.00)		\$ 840.00
Multiple Dep. Claim Fee	(\$260.00)		\$ 260.00
TOTAL FILING FEE			\$ 1100.00

A check for the statutory filing fee of \$ 1100.00 is attached. You are also directed and authorized to charge or credit any difference or overpayment to Deposit Account No. 19-4880. The Commissioner is hereby authorized to charge any fees under 37 C.F.R. 1.16 and 1.17 and any petitions for extension of time under 37 C.F.R. 1.136 which may be required during the entire pendency of the application to Deposit Account No. 19-4880. A duplicate copy of this transmittal letter is attached.

Priority is claimed from:

French Patent Application

96/15846

Filing Date

December 23, 1996

Respectfully submitted,
SUGHRUE, MION, ZINN, MACPEAK & SEAS
Attorneys for Applicant(s)

By:

Waddell A. Biggart
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WAB:rtw

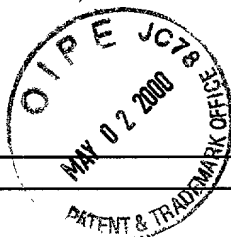
Applicant or Patentee: Alain BRUGOT, et al. Attorney's
Application or Patent No. U.S. Application No. 09/331,674 Docket No.: Q54768
Filed or Issued: June 23, 1999
For: METHOD FOR PRODUCING IMAGES HAVING AT LEAST A CODED PART
INDISCERNIBLE TO THE NAKED EYE

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) and 1.27(b)) -
INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled

described in

- ☐ the specification filed herewith
☒ application no. 09/331,674
☐ patent no. _____



I have not assigned, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9 (d) or a nonprofit organization under 37 CFR 1.9 (e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ no such person, concern, or organization
☐ persons, concerns or organization listed below*

***NOTE: Separate verified statement are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)**

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ADDRESS	_____
	<input type="checkbox"/> INDIVIDUAL <input type="checkbox"/> SMALL BUSINESS CONCERN <input type="checkbox"/> NONPROFIT ORGANIZATION
FULL NAME	_____
ADDRESS	_____
	<input type="checkbox"/> INDIVIDUAL <input type="checkbox"/> SMALL BUSINESS CONCERN <input type="checkbox"/> NONPROFIT ORGANIZATION
FULL NAME	_____
ADDRESS	_____
	<input type="checkbox"/> INDIVIDUAL <input type="checkbox"/> SMALL BUSINESS CONCERN <input type="checkbox"/> NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Alain BRUGOT	Bernard BARTHELEMY	
NAME OF INVENTOR	NAME OF INVENTOR	NAME OF INVENTOR
Signature of Inventor	Signature of Inventor	Signature of Inventor
Date	Date	Date
30 MARS 2000	30 MARS 2000	

ATTN: BOX PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Alain BRUGOT and Bernard BARTHELEMY

Serial No.: 09/331,674

PCT/FR97/02360, filed December 19, 1997

Filed: June 23, 1999

For: METHOD FOR PRODUCING IMAGES HAVING AT LEAST A CODED PART INDISCERNIBLE TO THE NAKED EYE

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

Prior to examination of the above-identified application, please amend the above-mentioned application as follows:

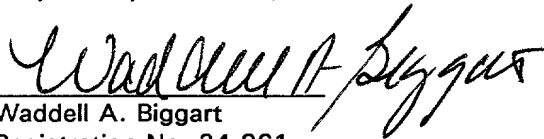
IN THE SPECIFICATION:

Please add the attached page entitled "ABSTRACT OF THE DISCLOSURE" as page 19 of the above-identified application.

REMARKS

Applicants submit no questions of new matter should arise and entry is requested.

Respectfully submitted,


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Date: August 23, 1999

Method for producing images having at least one coded part
undetectable by the naked eye

5 The invention relates to the production at industrial speed
of series of images all different from one another. It also
relates to the production of such images whose coded part
is undetectable by the naked eye but capable of being read
at high speed. The invention relates more particularly to
10 the use of these images to implement a process for marking
products for purposes of identification and/or monitoring
of their movement and flow, said process permitting, at
industrial rates of working, the manufacture, the fitting
and the recognition of single label texts.

15

PRIOR ART

The identification of products is often necessary for both
social and economic reasons. It is frequently essential, in
20 fact, to recognise without any risk of error:

- the owner of an object,
- the originator of an individual object,
- the origin of a manufactured object etc.

25

The direct applications of this identification are
naturally the combating of theft or counterfeiting, the
authentication of works of art, etc.. However, at an
industrial and commercial level, for example for the
30 management of stocks with a straight flow, the recognition
of products can also be useful in the management of said
flows: geographical monitoring of the products, checking of
their distribution systems etc..

35 The economic benefits linked to the identification of
products are therefore often considerable, requiring as a
result that the methods used have sufficient reliability.
However, the means used to recognised manufactured products

must not only be reliable, but also be able to keep pace with the rates of production.

In order to recognise the characteristics of a product, the latter must be the bearer of an original mark preventing any confusion. This recognition mark can be an integral part of the product or be affixed to it during or after its manufacture or its creation.

10 Methods of marking products by the fitting of labels have proved to be effective. MICRODOT and VIGICODE are in particular involved.

The MICRODOT process makes it possible to print a certain number of parameters on a film cut into pellets 2 mm in diameter on which are printed 5 lines of 15 characters, covering an area of 1 mm by 5/10 mm. The markings made with the use of this process have the major drawback of not resisting abrasion or scraping and consequently exposing the product to falsification.

The VIGICODE process was developed in order to correct this problem. It makes it possible to print a text composed of 6 lines of 18 characters, covering an area of 5/10 mm by 4/10 mm, on a film by a photographic process. Because this text is inserted into the body of the pellet, it resists abrasion and/or scraping.

These two systems permit identification of the owner of the object. Although practical and useful, they suffer from several defects:

- the texts printed on the labels, although of relatively small size, can in certain cases damage the product that bears them,

- the total number of characters on a label is relatively low, limiting as a result the number of different texts, or recognition marks, capable of being printed,
- 5
- the printing of a series of labels is carried out on the basis of a single matrix encoder, and the labels printed in large numbers are therefore all identical; thus, MICRODOT and VIGICODE permit the identification
- 10
- only of a family of products and not the product itself; this drawback is major in that the mark of the products can be reproduced by non-authorised persons and affixed to non-authentic products. The marking then loses all its utility.
- 15
- they do not propose the use of a code readable at high speed,
- the printing processes are such that the texts can be
- 20
- read only by contrast,
- despite their relatively small size, the labels produced by these processes and their text are, with an effort, distinguishable with the naked eye, which
- 25
- endangers protection.

The bar code is also used to mark products. Its most widely known application is that serving to recognise prices and to control the flows of large distribution products.

30

Although it offers a greater flexibility of use than the MICRODOT or the VIGICODE, the bar code nevertheless has the major drawback of being of relatively large size, particularly if it is desired to obtain a quasi-infinity of

35

texts. In addition, it has to be suitably oriented to be read. Its reading at high speed has never been able to be realised.

5

10

achieved, the implantation on the other hand affects the package in its tamper-resistance.

The industrial requirements give priority in particular to
5 discretion, rapidity of construction and reading, and reliability of the marking of the products.

OBJECT OF THE INVENTION

10 The present invention is brought about in order to correct the problems encountered with the markings of the prior art. More particularly, it has as its object to meet the following criteria:

- 15 - the coding system must have a capacity sufficient to guarantee a quasi-infinity of texts that are all different,
- the text must be inscribed on an area sufficiently
20 small that the marking remains imperceptible,
- it must be readable through 360 °, the need for orientation being incompatible with the imperceptibility of the marking,
- 25 - its reading must be compatible with industrial rates of working, i.e. 5 to 9 readings per second.

The invention also has as its object to implement a process
30 for marking products, the reliability of which is augmented by:

- the unique character of the image, that is to say of the recognition sign, affixed,
- 35 - the resistance of the images thus produced to abrasion and to scraping,

- the dimensions of the coded part chosen so that the latter is not detectable by the naked eye,
- the particular linking of the various stages in order to obtain maximum security during the marking.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a diagram showing the devices used to manufacture an image according to the invention.

Figure 2 is a diagram showing the devices and the stages in a realisation of a marking process according to the invention.

DESCRIPTION OF THE INVENTION

In the processes of the prior art, the creation and the printing of the images are such that it is possible to realise only a single recognition sign per group of products. In the process according to the invention, a device is used which is capable in a relatively short time, in keeping with industrial rates of working, of producing a large number of images that are all different and of printing them simultaneously in order to manufacture sequences of recognition signs. The variety of the characters and their number are sufficient to permit the production of a quasi-infinite quantity of texts all of which are unique. After printing, the pattern generated disappears.

To permit such an operation, an original combination of several devices and technical characteristics is brought about. The latter is shown in Figure 1.

There is combined the use of a computer program of a computer (1), a device for producing images (3), among others, for example,

cathode tubes and screens, and a device (5) reproducing this image on a support (6). In a first stage the data (2) are generated, either in random manner or by an algorithm in numerical form in a manner known in engineering. They
5 correspond to a particular code. They are then transmitted to a device (3) capable of converting numerical data (2) into images exploitable visually (4). Translated in this form, the data are simultaneously reproduced, for example by a photographic process, on a physical support (6)
10 constituted by the product for marking itself or any other means such as a film.

One of the characteristics of the image produced by the device mentioned above is its very short life. The visual
15 translation of the numerical data lasts only $1/3$ or $1/5$ of a second, in fact, and disappears as soon as its carry comes to an end on the support and is then replaced by the following translation. Industrial rates of production of images all of which are different can thus be obtained
20 while avoiding any possibility of the inadvertent disclosure of information.

A device particularly suited to the production of images is a system of the COM type. To date, this equipment has been
25 used only for the small-scale reproduction of existing documents on paper support. In the process according to the invention, it is used to convert the numerical data into images visually exploitable on cathode screen.

30 The transitory image thus produced is adjusted to the desired dimensions by a potentiometer.

According to a variant of the invention, for practical reasons the transfer of a sequence of images is effected on
35 a belt so as to form a ribbon of images more easy to use.

The reproduction of this image on a physical support, from the matrix or transitory image, is undertaken by various processes. Photographic printing, such as that used to produce micrographics, is particularly suitable. Use is
5 then made of a silver film on a support of polyester, polyethylene, polypropylene, glass, PVC, etc. to effect the printing. The image thus fixed can then undergo various treatments to strengthen its resistance to abrasion or to scraping, to facilitate its fitting or its adherence to
10 the product, etc.. A contrast film, for example, is placed on the printed or imprinted face. It can also be glued on (cold-setting adhesive or heat sealing).

This reproduction can also be obtained by printing,
15 photocomposition, silk screen printing or any process that is suitable and compatible with the information source, that is to say the device producing transitory images.

According to a variant of the invention, the printing is
20 performed tone on tone. To achieve this result, the code is printed with a difference in shade compared with the support which is imperceptible to the naked eye, even after enlargement. The codes thus transferred range up to black on black ground.

25 According to another variant, some of the visible and identical parts of each label (for example the logotypes) are realised by the application of a mask in front of the cathode screen.

30 According to another variant of the invention, the image thus formed presents several coded parts associated or not with coded parts, variable or not, and visible to the naked eye.

35 According to another variant of the invention, the transfer of the image of the cathode screen is effected directly

onto a product, for example a manufactured product, treated beforehand in a suitable manner. The image is then formed for example by photosensitization of the surface of the object or by engraving it directly by the "laser and mask" method. In this case, the mask is composed of the image obtained by use of the process described above.

Another characteristic element of the combination of means permitting the creation of labels meeting the objects listed is the nature of the code used. In order to realise the undetectable part of the label, this code is a dot code or matrix code. Thus, about 500 characters capable of being converted for example into alpha-numeric code are printed per mm². The reading of these codes is performed at high speed (5 to 9 per second) and does not require a precise orientation - impossible to obtain in any case because of the size of the coded part - of the object to be identified.

The reading of these codes is performed by a matrix camera.

The labels manufactured by a combination of these various means, that is to say means for producing numerical data, for converting these data and for printing their version in visually exploitable images, are particularly useful for effecting the marking of products for purposes of identification or the monitoring of movements and flows.

In a process for marking of this type, the stage following the production of the images on a support is the fitting of the label bearing the text for recognising the product. This is carried out by any means ensuring the adherence of the label to the product to be marked. It is particularly effected by using a device, a punch, manufactured specially for this process. This punch has the shape of the label to be fitted.

According to a variant, a ribbon of labels is used, the cutting up of which is carried out by controlled punching of the ribbon by this system.

- 5 According to another variant of the present invention, the resistance to abrasion is obtained by placing the printed face of the label on the product. In this case, the text is printed beforehand wrong side up and its reading is effected by transparency.

10

The labels fitted in this way are then read, by a manual or automatic means. In this second case, a matrix camera is used to validate their texts and relate them to the characteristics of the product to be identified. The latter
15 are memorised for example in a data bank to which recourse will be had during the procedure for identifying a product. This process is particularly effective if the texts are readable automatically at high speed.

- 20 In the case of a transfer of the code tone on tone, the automatic reading system is equipped with a spectrographic filter. The latter thus makes it possible to analyse the code by wave length difference. Codes ranging up to black on black ground can be read in this way.

25

According to a variant of this identification process, the memorising of the text of the label can be effected during its production before or during its printing.

- 30 The last stage in this process of identifying products is the reading and recognition of the text borne. This reading is such that it enables the sign read to be placed in parallel with those memorised during the reading. A read text whose equivalent is not found in the bank of memorised
35 texts testifies to the lack of authenticity of a product.

SAMPLE EMBODIMENT

The object of the present invention is to permit the realisation of a large-scale marking of products while
5 limiting to the maximum the risks of copying, theft or destruction of this marking in the interests of greater efficiency.

One of the characteristic elements of the process according
10 to the invention is the production at high speed of images bearing numerous characters, the latter themselves being sufficiently varied so as to be able to mark a very large number of products (particularly manufactured products) by a sign peculiar to each one, at industrial rates of
15 working.

In order to meet all these requirements, there is created, for example, an ASCII computer file (7). This file contains the fields required for the realisation of transitory views
20 (3 to 5 per second). These views are obtained by converting the numerical data (2) into visually exploitable images. In the sample embodiment, a COM XR AP of ANACOMP is used, or any apparatus of a similar type, modified for processing
65 micron films. This apparatus (3A) produces coded images (4)
25 on a cathode screen.

Certain zones are optionally visible, the others being reduced (up to 72 times compared with viewing with the naked eye). The texts comprise a certain number of
30 predefined fields. These fields are filled with numerous and varied characters. The images are therefore all different from one another. They include a matrix code and optionally alpha-numeric characters, patterns and/or bar codes. The alphanumeric texts appearing in the form of a
35 matrix card are generated either by a cryptographic algorithm, in this case held by the creator of the file, or at random.

The second stage in this process is the manufacture of the images properly so-called. It is simultaneous with the production of the images. According to a variant, it is preferred to realise a ribbon of images (6A) rather than individual labels. Production in ribbon form is more economic in industrial terms. It also limits the risk of loss, theft, etc..

In this embodiment, the ribbon of images is manufactured from the computer file. Use is then made of a photographic system (5A) fixing the image of the cathode screen or laser with partial or total reduction of that obtained by a potentiometer, then by an optical system. The support on which the transitory image is fixed is a silver micrographic film (6A) itself on a support of polyester, polyethylene, polypropylene, glass, PVC or any other material permitting photographic printing.

The chemical treatment is of the negative type (developer without re-exposure, fixing bath, rinsing and drying). The image is therefore in inverted position (that which is conventionally black opaque is here transparent).

The texts are either black on transparent ground, for reading on a clear support, or white, by chemical treatment during the development, for reading on a dark support, or tone on tone.

The images are separated by a locating block obtained by the addition of a superimposition plate permitting a precise positioning in the fitting module described below. The pitch between two labels is adjusted by programming.

When the recognition sign is not printed directly on the object, the last stage in the marking process properly so-called is the fitting of the label (8) to the product (12).

The cutting up of the labels is not done in advance. It is therefore necessary to use a device that performs this cutting up as well as the definitive adherence of the label to the object. To this end, a punch designed specially for
 5 the implementation of the invention is used. It has the shape of the label to be obtained.

The fitting is done by controlled descent of the punch, so as to deposit the punched label on the support. The
 10 pressure used is that required for the adherence. It is greater than the latter if it is desired to embed the label in the support.

The punch-matrix clearance is adjusted as a function of the
 15 thickness of the ribbon to be punched. The thickness of the matrix is of the order of a millimetre in order to limit the viscous rubbings created by a possible accumulation of adhesive between the punch and the matrix.

20 The punch can be used manually or automatically. In the case of an automatic use, the principle is as follows:

- advancement of the ribbon and positioning at 0.05 -
 0.1 mm by locating by any device, for example optical,
 25 of the signal separating the images on the ribbon,
- descent of the punch, initiated by the positioning,
 the holding in position and the placing in contact of
 the support with the ribbon of images (a contactor, a
 30 photoelectric cell or other is then used), punching of
 the ribbon and fitting of the label (8) to the support
 (12) by limitation of the travel of the punch.

After the fitting, the coded text of the label is read by a
 35 matrix camera (9) and memorised, for example in a data bank (10), in order that during an identification it can be compared with the signs borne by the checked products. The

reading of these recognition marks is performed by means of an image inversion microscope or by any other means for the automatic reading of dot codes. Within the scope of this example, it uses in particular a DOT CODE reading system, a
 5 CCD $\frac{1}{4}$ " high-resolution camera and a lighting device comprising a 100 W amplifier and an annular fibre. A specific lens (minimum 100-fold enlargement with mirror) is placed on the camera.

10 The last stage in the identification process is that of the reading and the comparison of the image borne by a product with all the texts memorised during the manufacture of the ribbons of images.

15 A consultation node (11) realised according to known processes permits, after the label texts have been studied by the authorised operators, the consultation of interconnected data bases (10) developed for each application of the marking process. This consultation
 20 permits decryption of the texts and consequently validates or not the authenticity of the object, indicates its provenance, its owner, etc..

This sample embodiment corresponds to the particular case
 25 of the authentication of products. Other embodiments are adaptable to different uses. For example, a restriction to the reading of data items borne by the product, without their comparison with those memorised, is possible. In this case, the stages in the process are substantially the same,
 30 with the exception of the consultation of the node (11).

The invention relates in particular to the manufacture at industrial rates of working of images bearing a coded part different for each of them, which is undetectable by the
 35 naked eye and capable of being read at high speed. Based on the teachings of this invention, other images are designed such as images formed by several coded parts, by one or

more coded parts and one or more non-coded parts, fixed or variable etc.. It is also possible to envisage affixing several coded labels to the same product.

CLAIMS

1. Process for the manufacture at industrial rates of working of images that are all different from one another, possessing at least one coded part undetectable by the naked eye which is capable of being read at high speed whatever its orientation with respect to the reading device, characterised in that:
 - a computer program generates, in a random or algorithmic manner, numerical data corresponding to a particular, for example alpha-numeric, text;
 - these numerical data are converted by a suitable device into a visually exploitable and transitory on screen image;
 - this image is transferred to a physical support,characterised also in that the text of the code undetectable by the naked eye of this image is present in the form of a dot code.
2. Process according to claim 1, characterised in that the device converting numerical data into images exploitable visually on a cathode screen is an apparatus used to produce microforms as computer output.
3. Process according to claim 1, characterised in that the physical support is a synthetic film, such as a silver micrographic film, treated to permit the photographic printing of the image and present in the form of separate labels or that of a ribbon.
4. Process according to claim 1, characterised in that the image is transferred to a support such as a film

by photocomposition, silk screen printing or any process compatible with the information source.

5. Process according to claim 1 or claim 4, characterised
5 in that the code is transferred as tone on tone to the support.
6. Process according to claim 1 or claim 5, characterised
10 in that the physical support is constituted by the product to be marked.
7. Process according to any one of the preceding claims,
characterised in that the coded part of the image is
15 combined with one or more non-coded parts visible to the naked eye that are different or identical on each image.
8. Process according to claim 7, characterised in that at
20 least one of the visible parts, that is identical on each label, is produced by placing a mask in front of the cathode screen.
9. Process for marking products, using the images
25 produced according to claims 1, 2, 3, 4, 5, 7 and 8, characterised in that it comprises the stages consisting of:
 - generating numerical data corresponding to a
30 given code;
 - converting these data into a visually exploitable
image whose coded part uses a dot code;
 - transferring this image onto a physical support,
35 for example a synthetic film;

- affixing one or more images thus produced to the product to be marked, for example by a matrix punch cutting them to the shape;
- 5 - reading the code or codes affixed with a matrix camera and storing them in memory;
- reading these codes once again during the identification and comparing them with those
10 memorised by means of a consultation node.
- 10. Process for marking products according to claim 9, characterised in that the fitting of the image is replaced by the use of the latter as a mask to engrave
15 the product to be marked, for example by the "laser and mask" system.
- 11. Image bearing at least a coded part undetectable by the naked eye and capable of being read at high speed
20 characterised in that it may be obtained by the process disclosed in claims 1 to 8.

ABSTRACT OF THE DISCLOSURE

The invention concerns a method for sequentially producing at an industrial rate single copies of images having at least a coded part indiscernible to the naked eye capable of being read at high speed. It also concerns the use of these images for identifying and/or monitoring products. This method is characterized in that it consists in producing digital data, converting them into visually exploitable images and carrying these images on a medium. It is further characterized in that it uses at least one dot code, indiscernible to the naked eye, for differentiating each image and for enabling fast reading. The resulting images are then affixed on the products to be identified or for which the flux is to be monitored and/or managed.

FIGURE 1

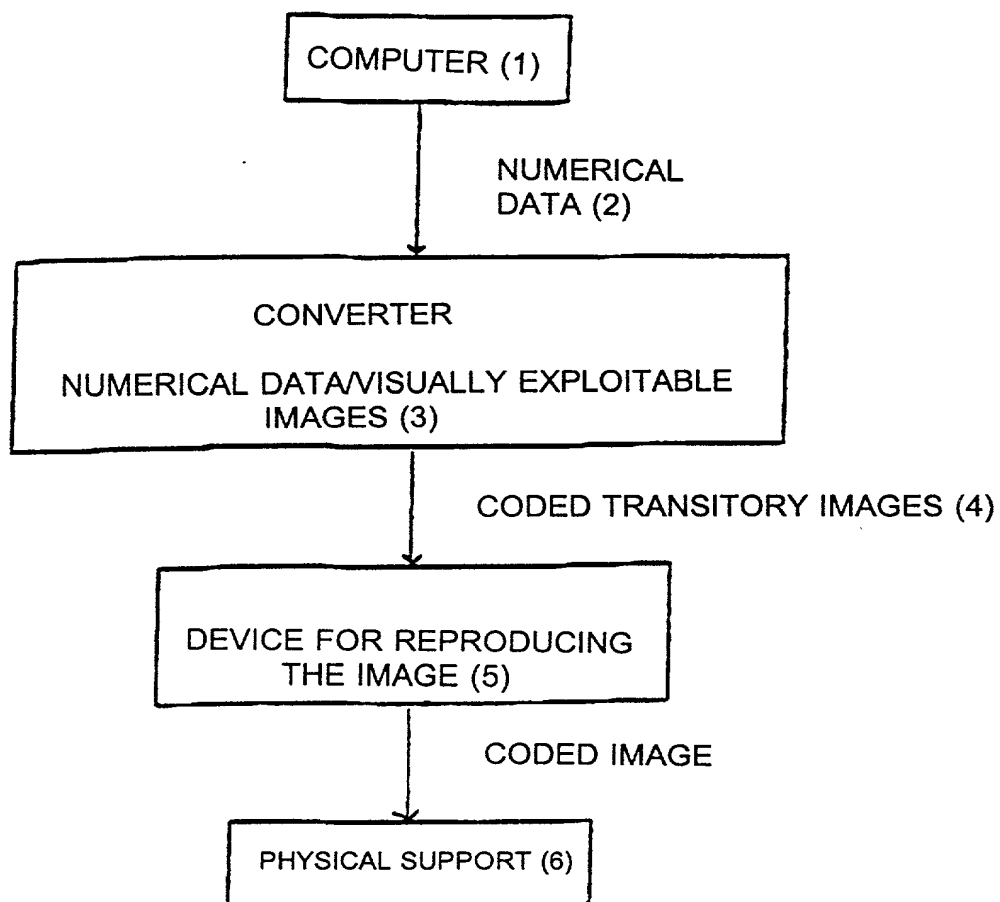
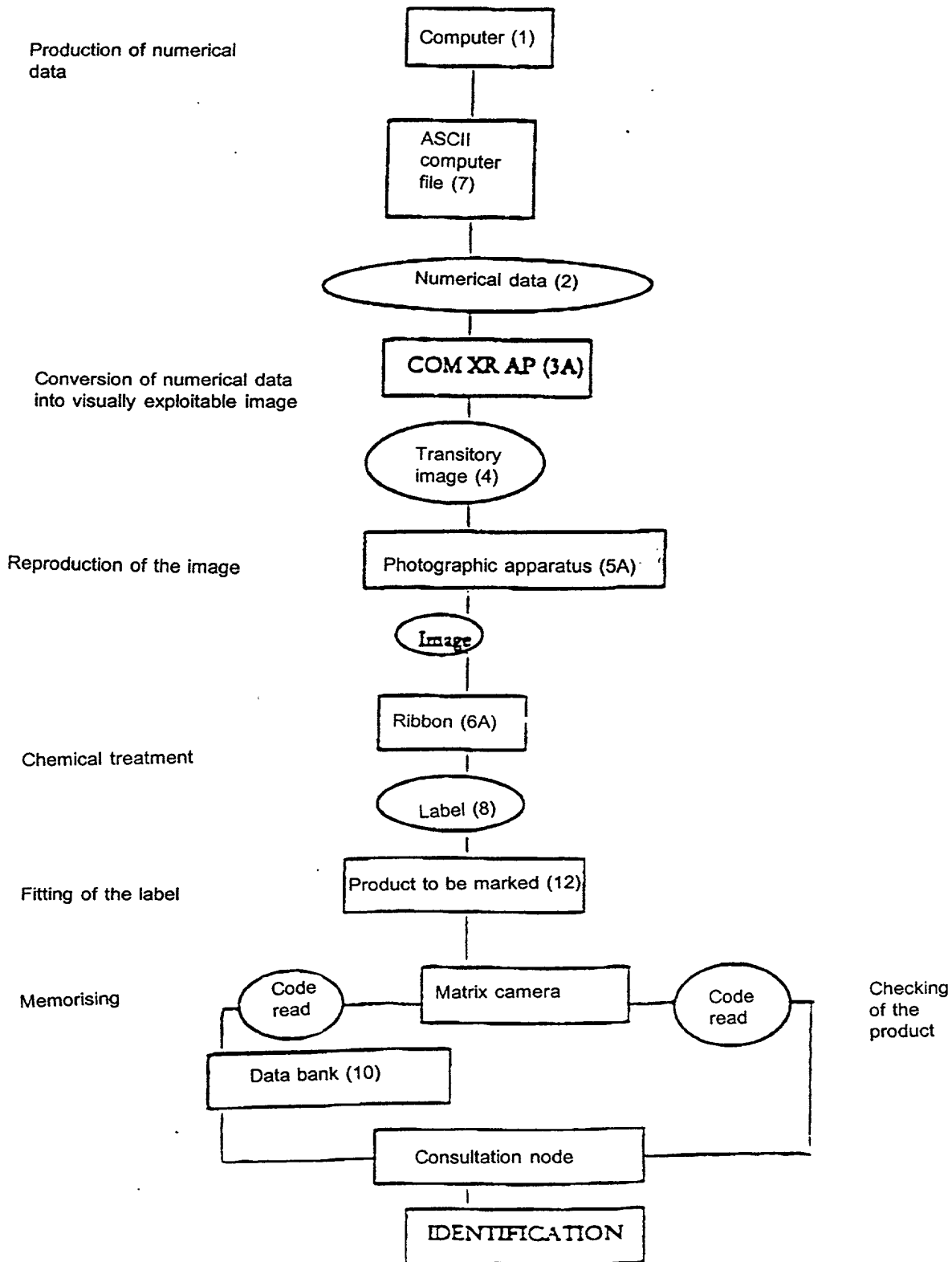


FIGURE 2



DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name: that I verily believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter claimed and for which a patent is sought in the application entitled:

**METHOD FOR PRODUCING IMAGES HAVING AT LEAST A CODED PART
INDISCERNIBLE TO THE NAKED EYE**

which application is:

☐ the attached application
(for original application)

PCT/FR97/02360, filed December 19, 1997

☒ Application No. 09/331,674

filed June 23, 1999, and amended on

December 1, 1998

(for declaration not accompanying application)

that I have reviewed and understand the contents of the specification of the above-identified application, including the claims, as amended by any amendment referred to above; that I acknowledge my duty to disclose information of which I am aware which is material to the patentability of this application under 37 C.F.R. 1.56, that I hereby claim priority benefits under Title 35, United States Code §119, §172 or §365 of any provisional application or foreign application(s) for patent or inventor's certificate listed below and have also identified on said list any foreign application for patent or inventor's certificate on this invention having a filing date before that of any foreign application on which priority is claimed:

Application Number	Country	Filing Date	Priority Claimed	
			Yes	No
96/15846	FR	December 23, 1996	<input checked="" type="checkbox"/>	<input type="checkbox"/>

I hereby claim the benefit of Title 35, United States Code §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in a listed prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge my duty to disclose any information material to the patentability of this application under 37 C.F.R. 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Application No.	Filing Date	Status
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I hereby appoint John H. Mion, Reg. No. 18,879; Thomas J. Macpeak, Reg. No. 19,292; Robert J. Seas, Jr., Reg. No. 21,092; Darryl M. Xic, Reg. No. 23,063; Robert V. Sloan, Reg. No. 22,775; Peter D. Olexy, Reg. No. 24,513; J. Frank Osha, Reg. No. 24,625; Waddell A. Biggart, Reg. No. 24,861; Louis Gubinsky, Reg. No. 24,835; Neil B. Siegel, Reg. No. 25,200; David J. Cushing, Reg. No. 28,703; John R. Inge, Reg. No. 26,916; Joseph J. Ruch, Jr., Reg. No. 26,577; Sheldon I. Landsman, Reg. No. 25,430; Richard C. Turner, Reg. No. 29,710; Howard L. Bernstein, Reg. No. 25,665; Alan J. Kasper, Reg. No. 25,426; Kenneth J. Burchfiel, Reg. No. 31,333; Gordon Kit, Reg. No. 30,764; Susan J. Mack, Reg. No. 30,951; Frank L. Bernstein, Reg. No. 31,484; Mark Boland, Reg. No. 32,197; William H. Mandir, Reg. No. 32,156; Brian W. Hannon, Reg. No. 32,778; Abraham J. Rosner, Reg. No. 33,276; Bruce E. Kramer, Reg. No. 33,725; Paul F. Neils, Reg. No. 33,102; Brett S. Sylvester, Reg. No. 32,765; Robert M. Masters, Reg. No. 35,603; George F. Lehnigk, Reg. No. 36,359; John T. Callahan, Reg. No. 32,607 and Steven M. Gruskin, Reg. No. 36,818, my attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and request that all correspondence about the application be addressed to **SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC**, 2100 Pennsylvania Avenue, N.W., Washington, D.C. 20037-3213.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

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